



EcoAid
BY MANFRED KRAUTTER

Poisons in Fur

Harmful chemicals in fur products

EcoAid by Manfred Krautter
On behalf of FOUR PAWS – animal welfare foundation

Hamburg, 5th December 2010

English Summary

Fur further information please read the complete study in German language at www.vier-pfoten.org

When people think of fur they mostly think of expensive fashion items or the cruelty associated with the raising and killing of mink, foxes or racoon dogs for their fur. Animal welfare groups are vehemently against the cruelty involved in farming these animals for their fur (chapter 4.1). Thus far, hardly any investigation has been made into if, and whether, fashion furs pose a health risk to consumers or sales staff.

Furs used in fashion are not natural products. On the contrary, very many chemicals are used in fur production. Several chemical processes – tanning, preserving, cleaning, dyeing and other treatments – are required before the animal pelt finally becomes a finished fur product (chapter 4.2). These processes are frequently carried out in countries where the use of particularly toxic chemicals is still commonplace. A whole range of substances are used that are very dangerous to health and the environment. For instance: heavy metal salts, solvents, pesticides, formaldehyde, preserving agents, bleaching agents, dyes and many others (chapter 4.3).

In contrast, the German Fur Institute (DPI) of the fur industry claims that: "Fur is part of nature just like leather and linen or cashmere and silk. The proverbial second skin feeling of wellbeing can even be explained and measured physically...fur is a piece of pure nature that scores high marks even from an ecological point of view."

Significant information on the actual chemical contamination of fur products marketed in Germany was extremely difficult to find even in the context of our extensive preparatory research for this report (chapter 7.1). Fur products are rarely inspected by state-controlled institutions even though evidence of toxic chemicals is often found in related product groups such as leather and textiles – frequently at levels higher than legal limits.

The aim of this report is to close the knowledge gap in relation to toxic substances in fur fashion products. It highlights the dangers of consumers being exposed to chemicals in furs.

EcoAid by Manfred Krautter has undertaken extensive research on behalf of the VIER PFOTEN animal welfare foundation. Between October 2010 and November 2010, 15 retail

fur products were analysed by the laboratory of the Bremer Umweltinstitut (Environmental Institute, Bremen) to find out whether they contained toxic chemical residues.

What kind of products were analyzed?

In September 2010, 15 samples of fur and textiles with fur edgings were bought in German shops in Hamburg, Kiel, Frankfurt am Main and Fürth or online. These samples included furs from foxes, mink and racoon dogs that had been made into hats, collars, hoods with fur edging, ear muffs, scarves, pompoms and other such items. There were also two children's jackets (chapter 6).

What was investigated?

In a preliminary laboratory analyses, assorted fur samples were investigated for a wide range of chemicals in order to determine whether there were chemicals at all, and if so, which chemicals were contained in the items (chapter 8.2). The investigations concentrated mainly on chemicals that preliminary research had shown to be widely used in fur production:

Table 1 Substances under investigation




Chemicals	Application
Low and medium volatile and organic compounds (VOC and SVOC)	Solvents, process chemicals, preserving agents etc.
Pentachlorophenol – PCP	Preserving agent
Azo dyes Resp. p-aminoazobenzene	Dyes and their contaminants hazardous to health
Formaldehyde	Tanning chemicals, auxiliary agents in the fining and dyeing process
Chromium VI	By-product of chromium tanning chemicals
Dimethyl furmerate	Preserving agent
TBT and other tin organics	Preserving agent
2-(thiocyanomethylthio) benzothiazole (TCMTB), 4-chloro-m-cresol, o-phenylphenol and other preserving agents	Preserving agent
Naphthalene and other polycyclic aromatic hydrocarbons (PAK)	Mothproofing agent, contaminated oils
Chloroparaffins	Greasing agent or waterproofing

Chemicals	Application
Alcohol ethoxylate: nonyl- and octylphenol ethoxylate. Nonyl- and octylphenol	Tensides in washing agents and their decomposition products
Pesticides according to multimethod	Auxiliary agent for storage, protection from spoilage

The preliminary investigation revealed a considerable degree of contamination, mainly due to four chemicals. All four of these substances are particularly hazardous to health: formaldehyde, nonylphenol ethoxylate, chloroparaffins and polycyclic aromatic hydrocarbons (PAH). The composite samples found to be contaminated with these substances were included in the main investigation and analysed individually.

Results of the laboratory tests and assessments

The main investigation revealed that some of the analyzed samples were substantially contaminated with four problematic chemicals (chapter 8.1). EcoAid assessed the 14 individually investigated samples as follows:

- **One (7%) of the 14 items was assessed as moderately contaminated** (sample 9). This item is not suitable for children and susceptible adults. The values were slightly over the limits recommended by EcoAid of 30 mg/kg for formaldehyde and 50 mg/kg for nonylphenol ethoxylate. 
- **Seven (50 %) of the 14 items were assessed as substantially contaminated and not recommended** (Samples 1, 3, 5, 6, 13, 14, 15). The formaldehyde values in all these items exceeded the allowable legal values for formaldehyde as stated, for instance, in the EU toy safety directives and the current maximum values of important industry standards. In sample 6, recommended values for PAK set by the Bundesamt für Risikobewertung (German Federal Institute for Risk Assessment) were presumably exceeded. These articles are therefore not suitable for children and susceptible adults and should even be avoided by healthy adults. 
- **Six (43%) of the 14 items were assessed as highly contaminated, potentially damaging to health and not recommended** (Samples 2, 4, 8, 10, 11, 12). Formaldehyde values in samples 4, 8, 10, 11, 12 exceeded the maximum formaldehyde values for adults defined in the German industry standards SG Leder and Öko-Tex 100. These items are neither suitable for children nor adults. 

In one sample (4) nonylphenol ethoxylate values exceeded the allowable limit values defined in the Hazardous Substances Ordinance. There was no directly applicable value for the higher concentrations of medium chain length chloroparaffins found in sample 2; contamination was however assessed as potentially damaging to health.

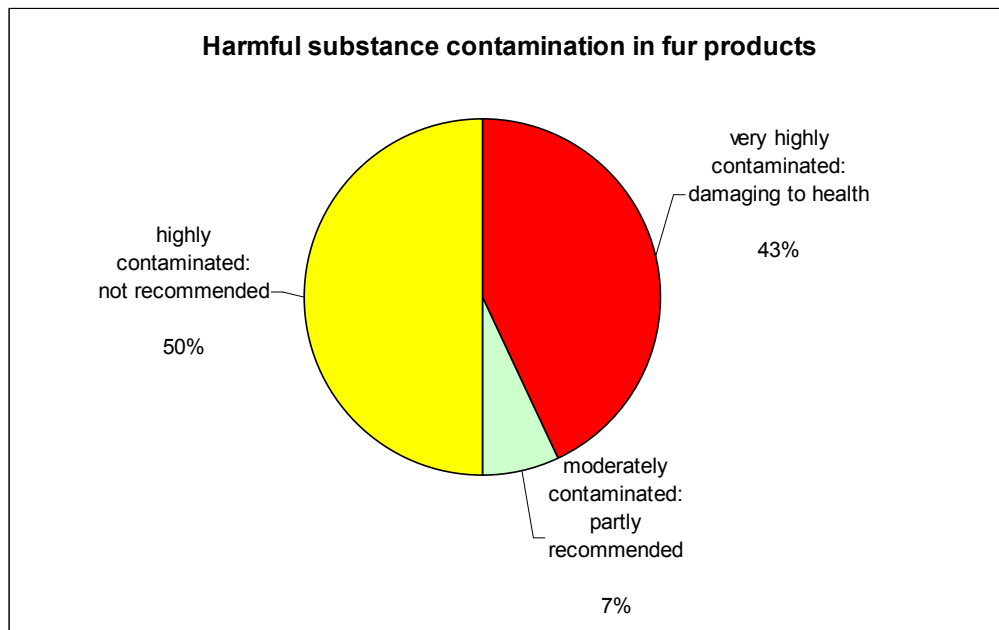


Fig. 1 Results of the main investigation in this report

Child's jacket with toxic fur edging

The sample in the test with the highest contamination of chemicals damaging to health: A child's jacket from Airfield Young Generation with fur edging around the hood, bought at Pustebume in the Hanseviertel shopping centre, Hamburg.

The fur around the hood contained both 450 mg/kg of formaldehyd and 2900 mg/kg of nonylphenol ethoxylate. Health risks to children cannot be ruled out and it is therefore necessary to stop sales of this product immediately.



Which chemicals were found in fur items and how should the residues thereof be assessed?

1. Formaldehyde: 100 percent of the samples contaminated

Formaldehyde was the chemical most frequently found in this test - it is carcinogenic and can trigger allergies. There was evidence of formaldehyde in all 13 individual samples tested for this substance. Formaldehyde is volatile and easily inhaled. The highest value found was 450 milligramms per kilogramm (mg/kg) in fur stitched to a child's jacket (sample 4). The lowest value found was around 14 mg/kg in a fox fur sample (sample 2) (chapter 9.1 and 10.2).

Legal limits and industry standards limits for formaldehyde exceeded:

- In ten (77%) of the 13 samples, the values found exceeded the current 30 mg/kg limit defined in the EU Toy Safety Directives for toys made of textiles. The value found in the fur edging on a child's jacket was fifteen times this limit (sample 4).
- In five (38%) of the samples, values were found to exceed even the current maximum values for adults set at 75 mg/kg in the German industry standards SG Leder and the well-known Öko-TEX 100.

EcoAid evaluation: Fur products that contain formaldehyde in concentrations of over 30 mg/kg cannot be recommended from a preventative health protection point of view, and should not be on sale. For anyone suffering from allergies, the limits for contaminate values should be distinctly lower. The formaldehyde values found in samples 4 and 11 at 450 resp. 290 mg/kg, pose a serious health risk. The manufacturers and retailers of such products, the German Federal Consumer Protection and Food Safety Agency (Bundesamt für Verbraucherschutz und Lebensmittelsicherheit) and the EU Commission for Health and Consumer Protection should all be called upon to ensure that the marketing of these products is stopped immediately.

2. Nonylphenol ethoxylate (NPEO): 80 percent of samples contaminated

Octylphenol ethoxylate (OPEO): 10 percent of samples contaminated

Ten samples were tested for residues of nonylphenol ethoxylate (NPEO) and the octylphenol ethoxylate (OPEO) substance groups. NPEO is mostly prohibited in the EU but was found in 8 of the samples. The amounts found were between 2900 mg/kg (sample 4) and 51 mg/kg (sample 9). OPEO was found in a mink sample; the amount was 120 mg/kg. NPEO can break down into nonylphenols which can disrupt hormones – both substances

are extremely toxic for water organisms. Nonylphenols can presumably disrupt the human hormone system. (chapter 9.2 and 10.3).

Legal limits and industry standards limits exceeded:

- The use of chemical products containing more than 1000 mg/kg NPEO is prohibited in the EU. The value found in fur on a child's jacket (sample 4) was almost three times higher. The values found in samples 14 and 15 reached about 80% of this value.
- 100 mg/kg is the maximum value for NPEOs defined in the (German) industry standard for leather and fur. This value was exceeded in 6 of 10 samples.

EcoAid evaluation: Basically, according to EU regulations nonylphenol ethoxylate (NPEO) and octylphenol ethoxylate (OPEO) should no longer be used. This is a demand that should apply to products that do not originate from EU countries.

Fur products that contain concentrations of nonylphenol ethoxylate of over 50 mg/kg cannot be recommended from the perspective of preventative health and environmental protection. They should not be sold or worn.

3. Polycyclic aromatic hydrocarbons (PAK): 8 percent (1 of 12) of the samples had a raised contamination level

Raised PAK levels were found in one composite sample from the preinvestigation with the individual samples 2, 6, 10 and 14. Naphtalene and phenanthren were found in 3 samples (2, 10, 14), two of the 16 proved to have PAK in concentrations of 0.1 to 0.3 mg/kg. None of these samples exceeded current limits. The fourth sample from the composite sample, (no.6) was not individually analyzed due to insufficient material being available. It may be assumed that this sample was contaminated with at least two carcinogenic PAKs - chrysene and benzo(a)anthracene – to values clearly above the 0.2 mg/kg limit set by the BfR- Bundesinstitut für Risikobewertung (chapter 9.3 and 10.4).

EcoAid evaluation: Items such as the investigated sample 6, containing more than 0.2 mg/kg of carcinogenic PAK should not be sold or worn.

4. Chloroparaffins: 8 percent (1 of 12) of the samples highly contaminated

Four samples were tested for so-called short, medium and long length chain chloroparaffins. The amount of medium chained chloroparaffins (C₁₄-C₁₇) found in sample 2 was 2200 mg/kg.

EcoAid evaluation: Contamination of the environment and consumers with chloroparaffins should be minimized as far as possible because it is a highly accumulative substance and thought to be potentially carcinogenic. It should not be used at all in consumer products. EcoAid recommends that products containing short, medium or long length chloroparaffins in concentrations exceeding 100 mg/kg should not be sold or worn (chapter 9.4 and 10.5)

5. Further contamination:

Besides the four substance groups already named and closely described in chapter 9, the investigation found evidence of contamination from other high risk chemicals (chapter 8.2). The concentrations of these substances were found to be at a comparatively low level and were therefore not chosen to be part of the main investigation described in this report. This does not, however, imply that the contamination and danger posed by these substances should be neglected. On the contrary, these problematic chemicals increase the overall risk to which consumers are exposed from some of the investigated fur products. Amongst others evidence was found of:

- 4-chloro-3-methylphenol, a preserving agent for leather. It can be damaging to health if it comes into contact with skin or swallowed. It may cause serious eye damage. It can trigger allergic skin reactions and is extremely toxic to water organisms.
- Dibutylphthalate, a softener (placed in the highest category (1) on the EU list of substances which can disrupt hormones, the Endocrine Disruptor List). It can damage the foetus during pregnancy. It can presumably impair fertility. It is very toxic to water organisms. In the EU it is classed as a substance of very high concern and as such prohibited in baby articles, cosmetics and toys.
- Caprolactam: This is used as an auxiliary agent in dyeing fur presumably to make it supple. It is damaging to health if inhaled or swallowed. It can cause serious inflammation in the eyes, skin and respiratory tract.
- Biocides and pesticides such as chlorpyrifos, lindane und o-phenylphenol. The insecticides chlorpyrifos and lindane are toxic to the nervous system and toxic to water organisms, birds and bees. They accumulate in the environment and are persistent.
- DEGMB (diethylene glycol monobutyl ether und DEGMBA (Diethylene glycol monobutyl etheracetate)

Conclusion:

This laboratory tests revealed that a large number of fur products sold in Germany contain a multitude of toxic chemicals. Many of the investigated samples contain concentrations of harmful substances which can adversely affect health. In several cases, even the legal limits were exceeded.

Fur and fashion industries as well as retailers must ensure that, as far as possible, no hazardous chemicals are used in fur production, and that staff and consumers are protected from exposure to any contamination potentially damaging to health. They must,

at the very least, ensure adherence to legal limits, officially recommended limits and the maximum values set out in (German) industry standards such as SG Leder and IVN – an international association for the natural textile industry. In taking responsibility for the products they make, trade and industry, including the fur industry, should ensure the maintenance of environmental protection standards as well as industrial health and safety standards during production.

Currently, specific legal limits for fur do not exist for most of the substances found in the fur products. However, proven high and frequent contamination makes such limits necessary. These gaps must be closed by the German Federal Government and the EU. In addition, the Lands of the Federal Republic of Germany must have better investigation and control procedures for fur products.

As a preventative measure to protect their health and for the protection of animals consumers should not buy fur products.